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# VICTORIAN ENTOMOLOGIST



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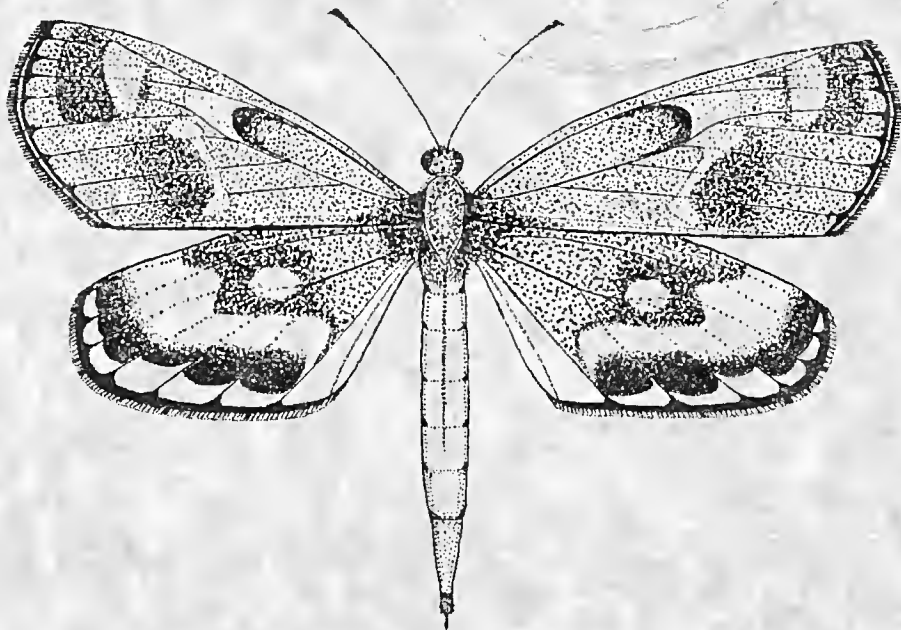
VOL. 39 No. 4

AUGUST 2009

Print Post Approved PP 349018/00058

Price: \$ 3.00

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*News Bulletin of The Entomological Society of Victoria Inc.*

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THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc)

## MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

### OBJECTIVES

The aims of the Society are:

- (a) to stimulate the scientific study and discussion of all aspects of entomology,
- (b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
- (c) to compile a comprehensive list of all Victorian insect species,
- (d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

### MEETINGS

The Society's meetings are held at the 'Discovery Centre', Lower Ground Floor, Museum Victoria, Carlton Gardens, Melway reference Map 43 K5 at 8 p.m. on the third Tuesday of even months, with the exception of the December meeting which is held on the second Tuesday. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions.

### SUBSCRIPTIONS (2008)

Ordinary Member	\$30 (overseas members \$32)
Country Member	\$26 (Over 100 km from GPO Melbourne)
Student Member	\$18
Electronic (only)	\$20
Associate Member	\$7 (No News Bulletin)
Institution	\$35 (overseas Institutions \$40)

Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

**LIFE MEMBERS:** P. Carwardine, Dr. R. Field, D. Holmes, Dr. T. New, Dr. K. Walker.

Cover design by Alan Hyman.

**Cover illustration:** The pale Sun Moth, *Synemon selene* Klug, is an endangered species restricted to perennial grassland dominated by *Austrodanthonia* in Western Victoria. It is now extinct in SA, and was presumed extinct in Vic. until its rediscovery, in February 1991, by the late Frank Noelker and Fabian Douglas. The Victorian Populations are parthenogenetic with all specimens comprising females, a most unusual trait in the Castniidae. Illustration by Michael F. Braby.

## Minutes of the Members Meeting 16 June 2009

**Present:** P. Marriott, M. Fiedel, L. Rogan, M. Endersby, I. Endersby, P. Lillywhite M. Hewish, D. Hewish, B. Davidson, M. Parr, L. Levens, S. Curle, V. Curle, K. Harris, R. Best, D. Stewart, M. Braby, C. Lambkin, J. Grubb, J. Grubb, P. Carwardine,

**Apologies:** D. Dobrosak, K. Walker, L. Gibson, E. Cochrane, J. Tuttle, E. Gillespie

A special welcome was made for Christine Lambkin, President of the Queensland Entomological Society and Queensland Museum and to Michael Braby, down from Darwin where he is currently looking after the Darwin Museum Entomological collection.

### **Minutes:**

Minutes of the previous Members Meeting [*Vic. Ent.* 39(2): 21-26 (2009)] were accepted. P. Carwardine moved, seconded P. Lillywhite.

### **Correspondence:**

The society has received the latest circular (June 2009 no. 139) from 'The Society for Insect Studies'. In summary, this latest circular contains articles on The Entomology of Drosophilidae, Lucanid Beetles, Dry Storeroom book review, Australian predatory katydid, Lewis Simpson report from Kiah and 'Heartless Ant'.

The latest Australian Journal of Entomology, V48, part 2 has been received.

We have received the latest copy of *Myrmecia* 45 (2), May 2009 - which has an excellent review of Collecting and Sampling Insects (CSI).

Associations Incorporation Act has been amended, more detail when the council meets next.

### **Membership**

The following entomological enthusiasts have been duly elected as members of the society:

- Jim Tuttle duly elected as a member of the society.
- Joshua Grubb duly elected as a member of the society.

Received proposal for new member:

- Grahame Moore from Kensington

### **Treasurers Report:**

- General account \$6281, Le Souëf account \$5432, publication \$9750.
- With the subs due in the 1<sup>st</sup> January, 11 people have yet to pay this year's membership renewal.
- We have today sold the 100<sup>th</sup> copy of the 'Collecting' publication.

### Editors report:

No editor's report was available as the society is still awaiting the appointment of a new editor.

### Le Souëf Award:

No nominations have been received so far this year.

**Note:** The Conservation and ENTRECS Committees are still in recess

### General Business:

This meeting was a show and tell, with members presenting their material and general discussion around various topics.

### Laura Levens

Laura brought along an interesting selection of photographs that she has recently taken.

Of note, Laura pointed out a Blue Hopper, found in Upper Beaconsfield, which had not been recorded in Victoria before. Murray Fletcher, a hopper expert with DPI in NSW, did the ID from the photo and said he was surprised as it hadn't been recorded for Victoria. I guess records are only made from specimens so that means another thing to come across again. Internet says it, *Dworena repleta*, is brown to black but this one was definitely blue.



Another image of a moth (*Chaetolopha oxyntis* Geometridae (Larentiinae)) found February 2009 at Upper Beaconsfield, has a special request from overseas.

Olga Schmidt (Olga.Schmidt@zsm.mwn.de) is researching these moths and has requested several fresh specimens (less than 5 years old) for DNA study in case it is a new species.

Anyone that can help Olga is request to contact her directly at the email address above.



Figure 1 *Chaetolopha oxyntis* Geometridae (Larentiinae) found February 2009 at Upper Beaconsfield

Peter Carwardine

Pete brought along one of his rare old books. It was an original copy of the *Insects of Australia* by R.J. Tillyard, published in 1926 for 25 shillings.

This was essentially replaced by the first CSIRO publication in 1970, and republished in 2 volumes in 1990.

Similar setup to CSIRO publications, with some black and white plates, and indeed a few colour plates (of butterflies).

Peter Lillywhite / Peter Marriott

Peter bought along a fascinating selection of 3 (of 20) boxes of weevils, that were generously donated to the museum as part of the Bob Thompson collection.

Ken Harris

Moths of Morwell National Park, 25<sup>th</sup> April 2009.

Ken presented images of a selection of moths that they had photographed at Morewell National Park. Ken explained that it was a terrible night for mothing; it absolutely poured down with rain, which led to a surprisingly successful night's mothing - particularly for rain moths!

Among the images that Ken showed us, were *Trictena atripalpis*, numerous Hepialidae, the odd Bogong moth, Black Spot Moth, lots of various Geometridae, Clara Satin Moth, various Arctiidae, and an unknown Ennominae (Geometridae) species that has previously only been spotted in 3 locations of NSW.



**Figure 2 unknown Ennominae species**

**Congratulations Ken!**

As a founding member of the Friends of Morwell National Park, for more than 20 years, Ken has made a major contribution to conservation and revegetation, developed and maintains a park website, and identified, photographed and produced a successful book about the park's flora and fauna and has recently been awarded the Parks Victoria Individual Environmental Kookaburra Award.

Russell Best

Russell presented a very interesting selection of images from his recent trip to Errinundra region.

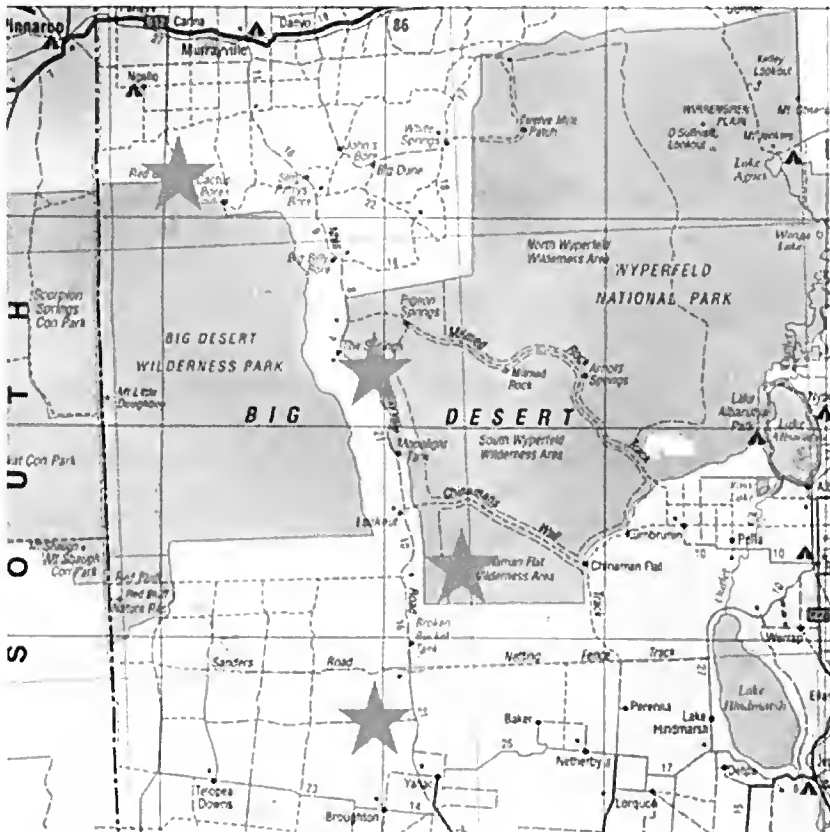
Russell showed many images including the following: Banks Brown (*Heteronympa banksii*), Macleays Swallowtail (*Graphium macleayanum*), Splendid Ochre Skipper (*Trapezites symmommus soua*), Common Dusky Blue (*Candulides hyacinthina hyacinthine*), Varied Sword Grass Brown (*Tisiphone abeona*), Small Alpine Xenica (*Oreixenica latalis latalis*), Southern Evening Damer (Telephlebia brevicauda) and an Antlion.

Marilyn Hewish

Marilyn has been interested in moths for about a year, and has been assisting in identification of species at the Museum. Marilyn and her husband decided to do a trip to the Big Desert, in May 2009, and the resulting presentation of images are from this trip.

This was essentially three weeks of mothing which Marilyn reports is a good way to get sleep deprivation!

They stopped at a number of places in that region, one which was up near the Victorian border.



- Yanac North. The light was setup on the dune, bringing down an Angled Satin Moth *Thalaina angulosa*, as well as *Amelora crypsigramma*, as well as a variety of species of *Dichromodes*. Marilyn report that their finding of the Ruby Anthelid *Anthela rubeola* is only the second recorded for Victoria; and Marilyn has now recorded it in a further two places on her trip.

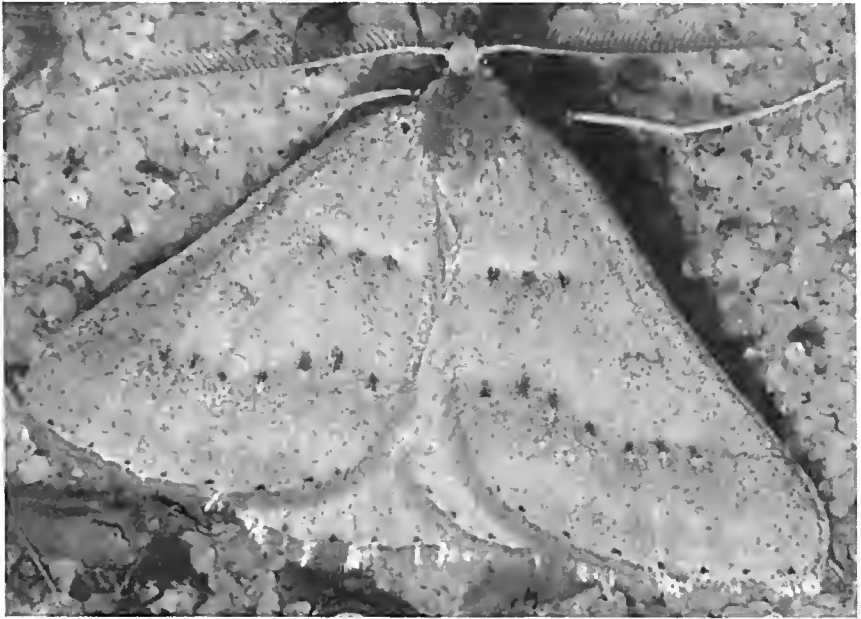


Figure 3 Geometridae *Dichromodes* sp.

- Red Bluff Track – Various *Dichromodes*, *Arctiidae* and *Geometridae* species.
- The Springs – the first *Hepialidae* *Fraus pteromela* came to the light, along with *Thudaca crypsidesma*,
- Army Camp, Cactus Bore Track – a clay pan with Black Box and Yellow Gums. Along with the rain was a number of species including one (*Lasiocampidae* *Symphlyta* sp) that had not been recorded in Victoria before this year (Fabian Douglas had captured one just two weeks before near Lake Hindmarsh). Other species recorded included *Chelioseia cosmeta* (4 specimens in Melbourne museum, Marilyn recorded 4 in one night), *Proteuxoa floescens*, *Anthela rubeola*





Figure 4 Lasiocampidae *Symphyta* sp., male

- Shearers Quarters Camp, Murray Sunset. Two nights nothing here produced a small plume moth (Pterophoridae) and many others including the first Victorian records for Geometridae *Thalaina kimba* and Anthelidae *Anthela ochroptera*

Marilyn reports that only a small proportion of those species collected have been examined and identified at this stage.

#### Maik Fiedel

Maik gave us a fascinating presentation on some of his work that he had been doing with Phasmidae and Mantodea. Prior to coming to Australia, Maik was involved with many of the European Entomological groups, and some of these photo's are from these adventures.



Figure 5 *Peruphasma schultzei*

Some of the species that Maik has been involved in have only very recently been discovered. Of the species of Mantis, Stick and indeed a giant Millepede that Maik showed us, were Peppermint Stick-insect *Megacrania batesii*, *Creobroter pictipennis*, *Miomantis pharaonica*, *Miomantis pharaonica*, *Bacchum extraleudatum*, *Haaniella dehaanii*, *Spiuhohirasca bengalensis*, *Trachyaretaon brueckneri*, *Heteropteryx dilatata*, *Peruphasma schultei*, *Oreophoetes peruana*, *Tenodera superstitiona superstitiona* and perhaps Maik's most unusual species of Praying Manis *Idolomantis diabolica*.

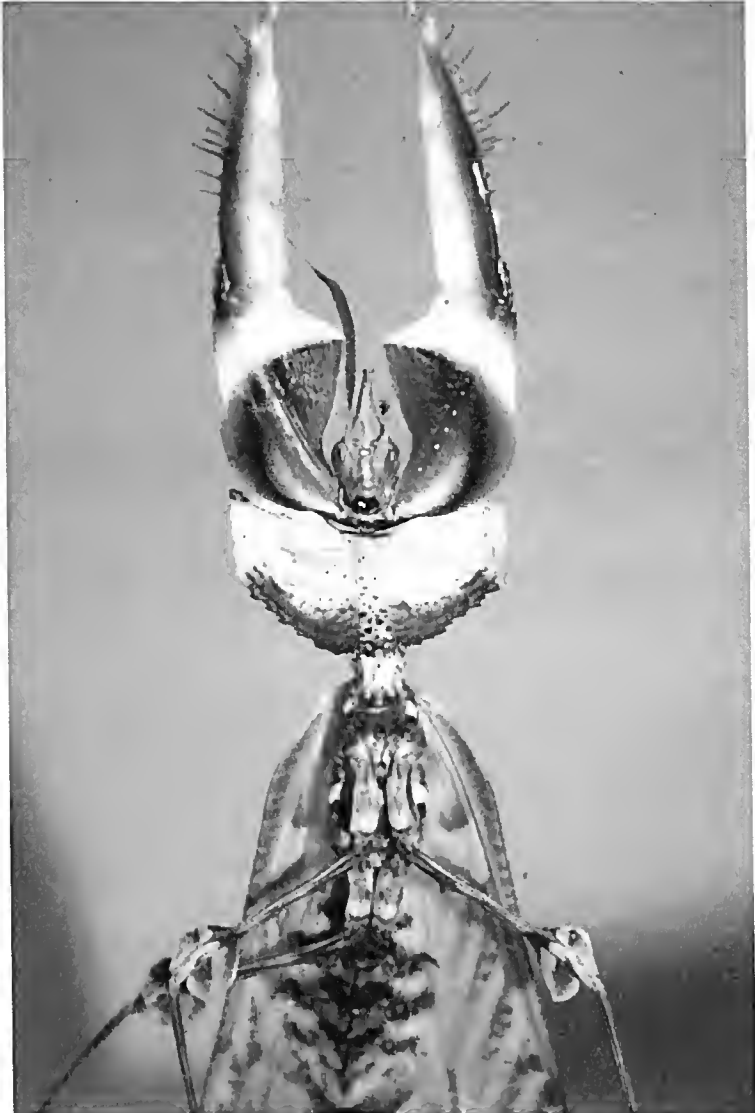


Figure 6 *Idolomantis diabolica*

**Next Meetings:**

If you are planning to attend any of these meetings; please refer to the website for any last minute amendments.

2009:			
<i>Month</i>	<i>Date</i>	<i>Planned event</i>	
July:	21 <sup>st</sup>	Council meeting	
August:	18 <sup>th</sup>	Members excursion 19:30 start	Proposed Forest Insects Collection, CSIRO, Monash Uni, Clayton
September:	15 <sup>th</sup>	Council meeting	
October:	20 <sup>th</sup>	Members meeting	Proposed 'Parks Victoria'
November:	17 <sup>th</sup>	Council meeting	
December:	8 <sup>th</sup>	Members meeting	Show n Tell Please note, December's meeting date is 2 <sup>nd</sup> Tuesday of December to try and avoid Christmas celebrations.

Meeting closed at 21:33

## Minutes of the Council Meeting 28 July 2009

The meeting was opened by the President at 17:07

**Present:** P. Carwardine, M. Fiedel, I. Endersby, P. Marriott, P. Lillywhite

**Apologies:** S. Curle, D. Dobrosak, D. Stewart

Mark Fiedel was welcomed to his first Council meeting.

**Minutes:** Minutes of the Council Meeting of 26 May 2009 [Vic. Ent. 39(3): 50-52] were confirmed. Carwardine/Lillywhite.

### **Correspondence:**

- (a) The Zoological Record (U.K.) no longer has access to the *Victorian Entomologist* and has requested a complimentary review copy. The Convenor would willingly accept an electronic copy so it was agreed to consent to the request.
- (b) Grasslands of Northern Melbourne. The proposals for an extension to Melbourne's Urban Growth Boundary, while not directly affecting the Craigieburn Grassland Reserve, will cause fragmentation of remaining grasslands in that region. Of direct entomological concern is the effect on Golden Sun moth populations. The Society will offer a letter of support to the Merri Creek Management Committee in their campaign and inform our members of the need for concern and actions. We will seek a summary of the MCMC submission to include in the *Victorian Entomologist*.
- (c) Associations Incorporation Act Amendments. A change to the Act now specifies that the Secretary of the Organisation will be the Public Officer. Council will implement the necessary change of person and address. The opportunity should now be taken to review the constitution of the Society and the Council aims to present recommendations in time for a vote at the Annual General Meeting in 2010.

### **Treasurer's Report:**

Account balances stand at General Account \$6,051; Awards Account \$5,464; Publications Account \$8,732. The amount in the Publications account recognises that the account for the CDs for Moths of Victoria, Part 2 has been paid. Nine members are still in arrears and another email attempt will be made to convince them to retain their membership. The Society's term deposit has been renewed for 11 months at 3.9%, the best available option.

### **Editor's Report (in absentia):**

Only one article has been received to date for the August issue. Council is still keen to incorporate news from entomological institutions within the State and each Councillor has been asked to nominate or locate appropriate contacts within these Institutions who would be prepared to correspond once or twice a year. Any members reading these minutes, who would be prepared to be involved, are very welcome.

### **General Business:**

- (a) Editor Position. No response has yet been received to fill this position. A special announcement will be made at the next general meeting in August.

- (b) 2009/2010 Meeting Schedule. All proposed activities for 2009 are confirmed. Each Council member has been asked to bring meeting topic and format suggestions to the next Council meeting. Council welcomes suggestions from members for meeting topics.
- (c) Publications. Over 140 copies of "Collecting and Sampling Insects" have been sold with revenue in excess of \$1000. Moths of Victoria, Part 2 is expected from the printer within a week of the date of this meeting. The same price structure as for Part 1, will be retained even though Part 2 contains additional pages. Work is in progress on Parts 3 and 4 with a target publication date of 12-14 months.
- (d) Insect Identification Charts. The CD accompanying the Moths of Victoria, Part 2 will contain a pictorial guide to most of the families of Lepidoptera. When this was first described one Council member suggested that it could also be produced as a folding laminated card to be used in the field and he proffered some overseas examples. At its last meeting Council was shown some alternative layouts, as folded cards and also booklets, in which Coleoptera, Hemiptera, Diptera and Hymenoptera were used as examples. In each of those Orders 20 to 30 families represent as many as 80% of the species. As members of the Council receive frequent requests for identification it was thought that there could be interest in publications of this sort. A number of questions need to be resolved before the Council embarks on this new project. (1) Is there really a demand for this type of resource? (2) Who will be the primary users? (3) Will users be content with a guide to family only? (4) Is a laminated folding card format for field use preferred over a booklet? [it would not be difficult to provide the same information in both formats] (5) How can the initial printing costs be funded? **Council is particularly interested in member's comments on this proposal.**
- (e) Website. Five alternative website home pages were presented for Council members to review the style, colour combinations and typefaces. Each member had differing opinions but some valuable comments were made. Council believes that the best approach would be for a small group of Councillors and members to gather around the webmaster's computer and to achieve a consensus on design. Guidance will also be sought on desirable content.
- (f) Society Archives. The Society has over 50 boxes of back issues and journals as both of the Professors who were storing them at La Trobe University have either retired or moved on. At its last meeting the Council agreed that it would offer the journals first to the Museum with any residue being offered to members. The Treasurer, who is reluctantly storing them at present, will contact the Museum Librarian direct to see if that Institution has any interest in incorporating parts into its collection.

The meeting was closed at 18:35

# Overview of the Butterfly Database: Part 1 - Project History and Inception

Kelvyn L Dunn

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## Dedication

*In memory of Nigel Quick (1928-2002) who devised and developed ENTRECS – a database on Victorian insects that motivated me to start a nationwide project on butterflies. Nigel's scheme served as an adjunct to his life passion of butterfly collecting. Early snippets on his database intentions, published in the Victorian Entomologist, now flicker like a candle of remembrance to a man of ambition and enthusiasm in his pursuit of entomological fact gathering. In an epitaph, Braby and McCubbin (2002: 243) remarked on how his pioneering distribution work had commenced "...well before most people had even heard of computers!" Towards the close of his life, between April 1995 and November 2001 inclusively, Nigel supplied hundreds of field observations to the Dunn and Dunn project. It seems fitting then to dedicate this paper to him as my own tribute to a friend and colleague.*

## 1. Introduction

As a pivotal step in the history of butterfly collecting, my father (Lawrence E. Dunn) and I devised a project to compile baseline records of butterfly temporality and spatiality nationwide. The 'Dunn and Dunn database' as it later became known, commenced in January 1983 with industrious plans towards extensive data extractions from museums and private collections. The existence of records that were then uncatalogued and often in widely dispersed sources drove the hobby purpose towards data centralisation. The project included a policy of openness – rather than secretiveness – that aimed to advance knowledge and aid conservation of butterflies by supply of observational and specimen-backed records to interested researchers. Many colleagues affirmed the aims and proffered much information from some 30 private collections to 1991 (Dunn & Dunn 2006: 824). The project has continued *ad hoc* through to the release, this decade, of an annotated version of the original atlas set which included much information on the project history. More recently, the compilers overhauled the entire database, publishing an update on the project's current directives and policies with an embedded request for continued contributions (Dunn 2008). The mission statement now reads "to accumulate spatial and temporal information, and continue to make this data available to others, as primary units or generalised in published reports" (Dunn 2008: 21).

To sustain ongoing field knowledge of butterflies it is important to recognise the role and contributions of amateurs. Local butterfly collectors have laboured in pursuit of their hobby for nearly two centuries in Australia. It is these ardent individuals – rather than professional scientists – who have been the most important source of butterfly information in this country to date (Sundholm 1982, Moulds 1987, 1999, Beale 1997). Supportively, in a report on the conservation status of the Australian butterflies, Dunn *et al.* (1994: 9) reliably determined that "of the c.100,000 records of Australian butterflies in the 'Dunn & Dunn database' about 95% have been traced to the efforts of amateur collectors." Clearly then, without these dedicated collectors, databases such as this one could never have existed. Their pivotal role also brings up an aspect of political correctness that requires attention, particularly in this age of insect conservation and positive public concern for wildlife. My use of the term 'collector' is in the same positive context as in the *Butterfly Action Plan*, broadened in concept to include "a wide spectrum of 'non-professional lepidopterists'" (Sands & New 2002: 26). 'Collectors', in this expanded sense, thus amass observations and retain vouchers to substantiate localities beyond known ranges (Braby 1999) or for other studies in natural history. In the *Butterfly Action Plan* – a landmark publication in insect conservation – Sands and New (2002: 19) stressed that the "collection of specimens should not be considered generally to pose a risk. We do not need to emphasise again that most collectors have a responsible concern for the wellbeing of butterflies..." Moreover, Endersby

(2009: 23) recently commented on social change related to conservation and an edging towards absolutism amongst purists. "One of the ironies is that those who won't kill insects, only photograph them, are very reliant on the Museum's pinned collection to identify their specimens." Clearly, a healthy balance involves avoidance of dichotomous thinking, and as a means to intelligence, enables scientific advancement.

This paper advocates centralising butterfly records to increase their availability. Relevant to the database processes and the project history overviewed, it discusses some lessons learnt from a forerunner scheme, *ENTRECS*, commenced by W.N.B. Quick to map the distribution of insects in Victoria.

## 2. Project history

Involvement with the *ENTRECS* scheme in the early 1980s provided personal incentive to create a broader butterfly-recording project. About that time, a year 10 secondary school course in BASIC programming enabled insight into processor functionality and digital capabilities, but this was just one tiny step towards a practicable goal. I soon envisaged a system with nationwide coverage; one that would utilise computerised relational data sorting, facilitate retrieval and display, and enable mapping of thousands of records. Conceptualisation of fine point-plotted maps, rather than large, filled grid-squares, simultaneously evolved from viewing the 1980s ABC music-television *Countdown* banner, which depicted continental transmission stations as scintillating points on a stylised map of Australia (Dunn & Dunn 2006). Rigorous, evidence-based supplements to the range-fill maps provided in the classic text, *Butterflies of Australia* by Common and Waterhouse (1981) were absent. Computer generated plotting using coordinates of latitude and longitude could create quality maps, but the labour intensiveness of manual plotting on such a scale had previously deterred serious efforts by others. Indeed, a few hand-plotted maps by Couchman (1954) and Couchman & Couchman (1977) for select Tasmanian species remained adventurous in the butterfly literature, especially for that time. In essence, a gap in the research was obvious – one I planned to fill using the superior capabilities of digital technology.

A mapping project jointly interested my father (LED), who was then working as a professional electrical engineer and hobbyist computer programmer. In about 1982 he had purchased a personal computer (PC), namely a *Z80 Microbee*, which utilised a converted television set as the monitor. This PC had 32Kb RAM – a lot of memory in that era – and a clock speed of 2MHz – over 1000 times slower than today's domestic PC standards and without multiple processor capabilities now available. A prototype database coded in BASIC, which we (the compilers) demonstrated on the *Microbee* PC at the Society's General Meeting in February 1983, displayed a sorted subset of records based on an array of search criteria (Dunn & Dunn 1983). This presentation helped establish the project as a serious hobby-venture in entomological data manipulation – a novel advance over a hardcopy catalogue. At that time, with only about 2,000 records compiled, we inferred our capability to create computer-generated plotted maps (Dunn & Dunn 1983). However, the CPU RAM limitations severely restricted access to the desired quantities of data, with audio-cassettes (magnetic tapes) – the backup data storage – requiring sequential loading and separate display to extract information. These hardware constraints created unwieldiness and raised some daunting concerns back in 1983 about the data-handling practicabilities on a larger scale and the economic feasibility of this. (Dunn & Dunn 2006).

Construction of a relational database and user-friendly interface for data-entry proved a major challenge in the absence of multi-functional GUI presentations, now ubiquitous worldwide, and shortage of affordable or specialist off-the-shelf software at that time. A database with relational capacity utilising look-up tables, with options to select frequently replicated information from subsidiary databases without the need to retype it, would help reduce error potentialities. Upgrade of the tiny *Microbee* PC to 512Kb of memory and instalment of a floppy disk drive in 1984 enabled



relational processing for data entry, using a CPM version of dBase II. LED wrote the machine code software to search the database, rather than using a commercial programming language, because he found that binary coding greatly expedited data manipulations. (Dunn & Dunn 2006).

By the late 1980s, greatly improved hardware functionality and memory capacity enabled the project aims. Rescue came in the form of an affordable MS DOS IBM compatible PC, initially equipped with what was then a 'huge' 20Mb hard disk! In 1989, using the programming language *Turbo-Pascal*, LED custom-wrote the final mapping program. It speedily accessed all record holdings to plot sites using latitudinal and longitudinal coordinates as geo-codes. Two prototype maps released for broader comment in 1990 illustrated the planned format. These included longitudinal convergence (Dunn & Dunn 1990) then unavailable in commercial mapping software. The following year, during the production phase of the atlas set, the database held over 88,000 records derived from more than 7,300 geo-coded sites nationwide. By the start of the 1990s, and for that era in computing, the holdings were large and competitively searchable compared with affordable off-the-shelf databases. In fact, all of the commercial products tested were slower than our specialised system (Dunn & Dunn 2006). Even so, computerised linkage of the relational data and its encryption for use by the custom search-program took over an hour to compile – a process lasting only a few seconds today!

Efficient data manipulation and plotting ingenuity established the graphical foundations of the atlas set, *Review of Australian Butterflies*, published in four parts between May and September of 1991. As a pioneering effort in data collation and manipulation, the point-plotted maps of Australia, including Tasmania, were the first available for a continent in international entomology (Dunn & Dunn 2006). It adopted the bio-geographic framework invented by a CSIRO botanist – later utilised in the *Flora of Australia* series – to compartmentalise butterfly data into sizeable units for tabulations. The Barlow (1985) system designated six natural zones within Australia, which embraced 33 botanical-based regions. It provided the most appropriate divisions of several tools considered (Dunn & Dunn 1991). The reason given being that almost all butterfly lifecycles link to larval food plants (Vane-Wright *et al.* 1984), biotic factors that profoundly constrain their distributions (McCubbin 1971: xxvi) – citing two persuasive sources from that era of research. None of the historic tools considered had focussed on lepidopteran groups *per se*; including several depicted by Valentine (1978) although one pertained to beetles. Importantly from a functional perspective, the Barlow system was grid-based rather than idealistic, defining with exactness its zone boundaries (Dunn & Dunn 1991). The adult temporal charts for these 39 divisions then became a second significant contribution to regional butterfly knowledge. The atlas set promoted the database within entomological circles and several bio-climatic research projects later drew on the holdings. In 2006, the atlas set was amalgamated and re-released as a digital file in Portable Document Format (PDF). This enabled linear viewing with search functionality and other GUI supports. It economically increased the limited availability of the original circa 140 printed sets. Annotations in the CD-ROM version indicating relevant changes to knowledge since the construction of the original maps, charts and the text on butterfly distribution, life history and taxonomy, eased its use alongside contemporary literature.

From 2007 onwards, we extensively overhauled the holdings. This refurbishment involved scrutiny of large data samples for inconsistencies; random crosschecks of original transcriptions with adjustments where required; elimination of dubious records as detected; and supplementation by recent field data. The database holdings had then enlarged to over 130,500 records, and spanned all species known from within political boundaries (Dunn 2008). Records from island out-groups under Australian jurisdiction were also included. These enhanced the greater Australian coverage, and supported a higher species tally of 434, as reported in that project briefing. The expansion then brought the database in line with the regional coverage provided by Braby (2000), the standard reference on Australian butterflies. In accordance with the project's re-vamped aims, and for increased alignment with evidence-based science, there was a need too for greater transparency in data supply. Limitations on anonymity now help researchers authenticate important records. Openness enables direct credit for effort and encourages collector accountability for data supply

(Dunn 2008). The report in 2008 enthused a few new collectors to participate, and together with other incoming sources over the last 12 months, these contributions have raised holdings by several thousand records. One institute is contemplating contribution (Perera 2009: 9) and others, with digital or hardcopy catalogued collections, may act supportively by voluntary supply to enlarge the holdings. On current trends, storage will exceed 140,000 records by the end of this year.

### 3. Evidence-based science: Transparency concerns and lessons learnt

A good measure of labelling accuracy is vital to specify actual sites and plot distributions to produce evidence-based maps. Unfortunately, many historic collectors did not appreciate the need for – or were unable to give – precision to standards desirable and promoted by the 1970s (Moulds 1973, Edwards 1999). However, factors of intrigue also intermingled with veracity. A tendency towards concealment pervaded the butterfly enthusiast culture up to the early 1960s, and this linked to maintenance of supply and demand for specimen exchange. As one example, C.G.L. Gooding (d.1980), a well-known exchanger of butterflies who resided in Victoria, resorted to coding many specimens with 'XYZ' as the stated locality (Dunn & Dunn 2006), to secrete one special site. Wisely disclosing its whereabouts (38°03'S, 146°05'E) to select confidants prevented future loss of precision for the many records involved. Of more concern though in terms of exactness, some collectors purposely over-generalised or conglomerated their localities. Many 1980s specimens of woodland-inhabiting species simply labelled as 'Perth WA' had unlikely occurred within a ten-kilometre radius of the CBD at that time, or for many decades prior for that matter, due to land-use changes. Again, the purpose was to safeguard expertise, investment of field time, and limit over-collecting at personal sites, as evidenced in correspondence from that era. These sensitivities are understandable but serious reduction in accuracy limits the specimens' scientific value in terms of plotting finer distribution. Moreover, in that era of concealment, some workers even inverted museum labels to hamper visual extraction of data by later peruser's, upping the risks of handling damage to aging and unique specimens. Eyed with suspicion, colleagues in the 1950s were competitors, rather than synergists collaboratively advancing butterfly knowledge.

It was against that culture of data concealment linked to an undercurrent of protectiveness (Sundholm 1982), that the first database enterprises, like *ENTRECS*, strove into the digital frontier. Indeed, that scheme's data essentials were limited in an attempt to pacify the contributing collectors' sensitivities concerning disclosure of exact sites in written form for the public domain. The deviser and developer of the *ENTRECS* scheme had opted, instead, for ten-minute grid squares. Each unit broadly represented an area of about 15km by 18km (c.270 sq. km) as the baseline precision for collection sites (Quick, 1976, ESV 1986, Burns & Burns 1992). Hence, there was no 'locality' computer-field in their database pro forma (Crosby 1979), albeit that the *ENTRECS* convener believed that lists of species by locality were achievable (Crosby 1979). If literally the case, rather than inferentially from sorting grid resolutions, it raises an ethical issue. On the pro forma, the 'district' field was marked "not for data bank" (Crosby 1979), thus its electronic storage would breach the publicly stated purpose for which it was gathered. An unofficial 'district' field – at odds with 'locality' with its nuance of higher exactness – marginalised essential information on the pro forma. Moreover, Quick (1976) rationalised that for plotting purposes any finer grid than 10-minutes was likely to undermine plotting aesthetics, but acknowledged that advisers had suggested that only a higher resolution plot would be scientifically meaningful. To compensate, he included a fine grid to one-minute resolution, titled 'nannogrid' on the supplied 'Individual Record Sheets'. However, its completion was marked 'optional' (Crosby 1979) and required contributors (rather than the project convener) to examine specific high-resolution maps of the state, adding encumbrance and personal expenses as a disincentive as well. These factors buffered against quality assurance.

The convener, D.F. Crosby justified that for their purposes the 10-minute grid-system was a "practical size to map" by manual plotting (ESV 1986: 1), but the design-flaws had created serious project limitations. Appeasement of collectors perhaps enticed a few of the more wary to participate, but a

measure of reticence still made for tardy progress (Quick 1976: 30) despite reminders (Quick 1978: 14; Crosby 1979). Quick (pers. comm. 2001) reflected later that the marginalisation of the locality field had resulted in the absence of this information from about 37 percent of submissions (n=4,373). This prevented crosschecking of the grid coordinates, and precluded the insertion of the 'nannogrid' by proxy, for those contributors who may have wished to do so but could not access the specified maps. Among submissions without a stated locality, the finer grid coordinates were absent from 71 percent, limiting over 1,100 records (26% of the total holdings) to no finer than the 10-minute resolution. With hindsight, Quick pondered on these limitations with despondency, and yet initial support for his project had been high given that 23 contributors registered very soon after its commencement (Anon 1977). Collectively, these concerns served as lessons learnt for the Dunn and Dunn project.

Today, data transparency (eg. Canzano *et al.* 2007) - not concealment or its appeasement - is the way forward for conservation research and amassment of distributional knowledge. To promote data centralisation, Sands and New (2002: 154) have called afresh for experienced collectors "to make available their unpublished records for sightings and specimens" as these can help in developing 'Recovery Plans' for needy species. Progressive social change away from concealment will hasten pooling of records for broader use in various projects and for archival, as was the intention for *ENTRECS* (Crosby 1979). Of course, there are still arguments for secrecy, such as the release of exact sites for critically endangered species on on-line databases, to which public access may be uncontrolled, but these are the exception rather than the rule. Scholarly consultation is advisable to decide what data if any should be subject to restrictions or by generalisation of the locality. Authors who are concerned about site security and who wish to over-generalise localities in their publications should be asked by reviewers to explain this in their texts. Openness about intentionally vague locality renditions in data contributions, on specimen labels, or in publications will help prevent these misleading sites being mistaken as genuine, historically extirpated sites by later data centralisers not privy to tacit 'adjustments'. (Otherwise, their inclusion as one or more separate meta-populations on plotted maps of finer resolution can give a false impression of species' presence within areas of anticipated occurrence). In effect, *ENTRECS* served as an icebreaker for the Dunn and Dunn project. It had timely cleared communicative channels among wary collectors and publicly tempered resistance to synergy, heralding in an era of transparency and digital information availability in amateur and professional entomology.

Contribution to various data-gathering systems will centralise information to enhance spatial and temporal knowledge of Australian butterflies. Collectors could re-commit to regular or intermittent supply of records to schemes such as the Dunn and Dunn project, or where relevant, to *ENTRECS* (Crosby 1990), albeit the latter remains in recess (ESV 2009). In addition, the Museum of Victoria hosts an extensive database pertaining to state records, and that project too welcomes donations of accurate information to enhance its on-line usefulness, access to which is monitored and entry is via a password. Like *ENTRECS*, it includes many records from Victoria supplied from the Dunn and Dunn holdings as part of our cooperative endeavour and synergism to enhance others' projects. As I wrote last year, a baseline of reliable data is essential for studies in climate change, and this is where the future usefulness of the butterfly database likely lies (Dunn 2008). To conclude this section, I emphasise the need for skilled enthusiasts to begin to digitise their own ethically acquired specimens and field diary observations. Supply of these to one or more collative projects may help enhance scientific knowledge and butterfly conservation.

### Acknowledgements

I would like to thank the late Nigel Quick for his discussions on some of the limitations of the *ENTRECS* scheme and supply of his digital database of over 2000 records to the project shortly before his death.

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Peter Marriott



*Spilosoma canescens* (Dark-spotted Tiger Moth) Tidal River - 25 September, 2005

## Excursion Notice

**Where :** This year's excursion is being kindly hosted by Laurie Cookson at the CSIRO Material Science & Engineering department in Clayton South.

We are to meet at the main reception of the Ian Wark Laboratory. Laurie Cookson or Steve Curle (no affiliation with the CSIRO) will be there to meet members of the society at the reception.

**When :** Tuesday 18th August 2009 19:30 (Note the slightly earlier meeting time)

**Address :** Ian Wark Laboratory, Forestry Division, Bayview Avenue, Clayton

**Directions :** Melway 70 bottom of F9 From Bayview Avenue, drive into the Monash University Clayton Campus; keeping to the left, the CSIRO entrance is a short distance on the left hand side. Once entering CSIRO, the reception and visitors car park is immediately in front of you.

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## DIARY OF COMING EVENTS

### August 18<sup>th</sup> Members excursion

Forest Insects Collection, CSIRO, Monash University, Clayton  
(Details Page 80)

Tuesday September 15<sup>th</sup>

Council Meeting

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